Analog Tachometer H100T

ELECTRO•SENSORS
ISO9001:2000

Features:

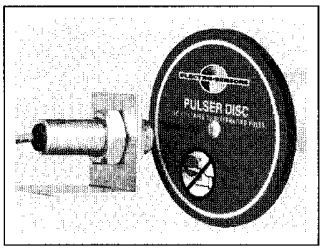
- **Easy Installation and Calibration**
- **±2% Accuracy**
- **±.1% Repeatability**
- **Taut Band Meter Movement**
- **4 Inch Width Meter Readout**
- **Optional 230 Vac, 24 Vac, 24 Vdc, 12 Vdc Operation**
- **Optional Explosionproof Sensor**
- **Optional Split Collar Pulser Wrap**

Description:

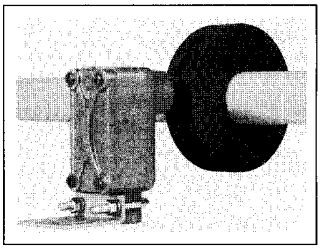
The Model H100T Analog Tachometer is a complete system capable of providing the user with a linear, visual indication of rates as low as 25 rpm full scale. The H100T utilizes the latest in solid state circuitry, has three switch selectable speed ranges, 0–50 rpm, 0–500 rpm and 0–5000 rpm, and an accuracy of ±2%. The easily readable display with the 4-inch wide, 50-division scale can be factory scaled to read out in desired engineering units.

Principle of Operation:

While the monitored shaft is rotating, the pulser disc or wrap, mounted on the shaft generates an alternating magnetic field whose frequency is proportional to the speed of the monitored shaft. This magnetic field is detected by the sensor and is transmitted to the meter. There the signal is converted to an analog reading that is directly proportional to the shaft speed.



Sensing Head and Pulser Disc



Optional Explosionproof Sensor and Pulser Wrap

Pulser Disc:

The end of the shaft to be monitored must be center drilled to a depth of 1/2-inch with a No. 21 drill and tapped for 10-32UNF. After applying Loctite® or a similar adhesive on the threads to keep the pulser disc tight. The pulser disc should be attached, decal side out, with the supplied 10-32UNF machine screw and lock washer.

Pulser Wrap (optional):

Pulser Wraps are custom manufactured to fit the shaft they will be mounted on. When the wrap is shipped, four allen-head cap screws hold the two halves of the wrap together. These screws must be removed so that the wrap is in two halves. Place the halves around the shaft, reinsert the screws and torque them to 8 foot pounds.

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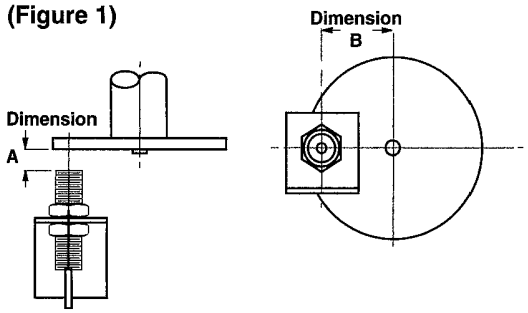
Sensor Installation:

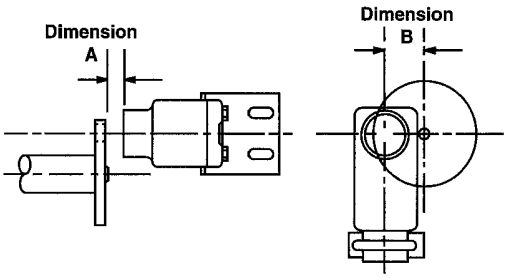
The standard sensor is supplied with a mounting bracket and two jam nuts. The explosionproof sensor is supplied with a slotted mounting bracket. Sensors should be installed so the center line of the magnets pass in front of the center of the sensor as the disc or wrap rotates. When using the pulser disc, the center of the magnetized area of the disc, shown as Dimension B in figures 1 and 3, is 1-3/4 inches from the center hole of the disc.

The gap distance between the sensor and the disc or wrap, Dimension A in the diagrams, can be from 1/16 inch to 1/4 inch. To achieve the proper gap distance, adjust the jam nuts holding the standard sensor in the mounting bracket, or adjust the position of the explosionproof sensor using the slots on its mounting bracket.

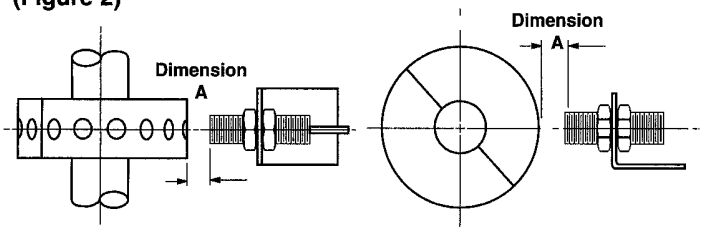
Standard Sensor and Disc (Figure 1)



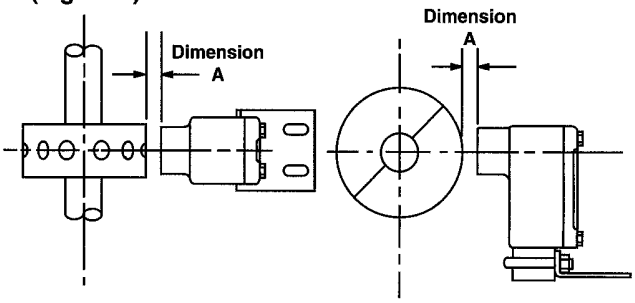
Explosionproof Sensor and Disc (Figure 3)



Standard Sensor and Wrap (Figure 2)



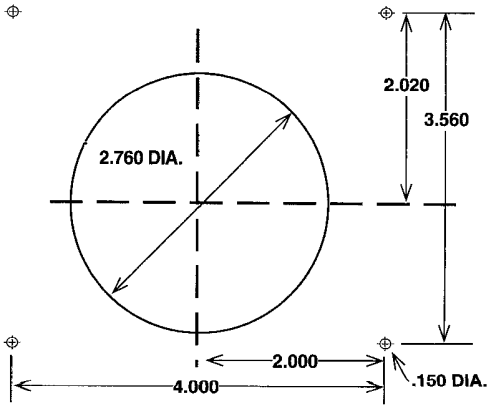
Explosionproof Sensor and Wrap (Figure 4)



Meter Installation:

Figure 5 Illustrates the cutout necessary for installation of the H100T Analog Meter into a panel. After the cutout has been made, remove the two nuts which secure the circuit board to the meter. Remove the circuit board. Remove the nuts and washers from each of the four meter mounting screws and slide the meter into the panel. Re-install the nuts and the washer on the four meter mounting screws. Tighten the nuts until the meter is held securely in place. Be careful not to over-tighten, or damage may occur to the meter housing. Be sure to observe the correct polarity, and re-install the circuit board by using the two nuts removed earlier, then tighten securely. The unit is now ready for wiring.

Panel Cutout Figure 5.



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Transducer:

Connect the transducer cable to terminal strip TB1. Refer to the table below for the proper connections.

Terminal	Description	Sensor Model 906-907	All Other ESI Sensor Models
TB1-4	Supply	Red	Red
TB1-5	Signal	Black	Clear
TB1-6	Ground	Clear/Shield	Black/Shield

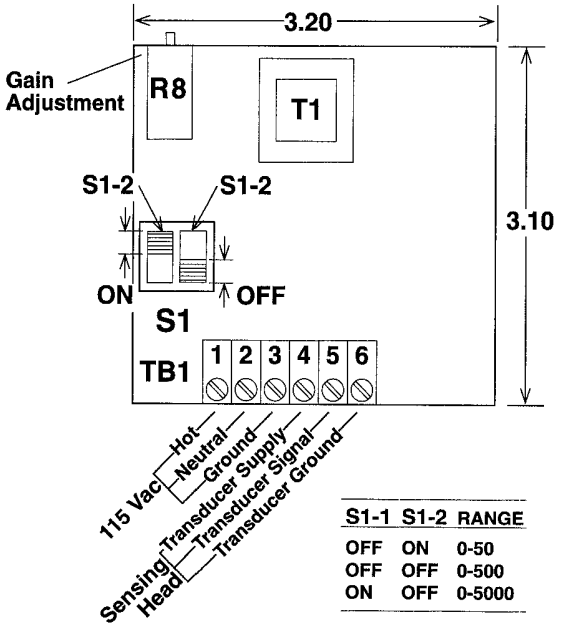
Input Power:

Connections for input power are made via terminal strip TB1. Refer to the table below for the proper connections.

115 Vac (standard)		230 Vac (optional)	
Hot	TB1-1	Hot	TB1-1
Neutral	TB1-2	Hot	TB1-2
Chassis Ground	TB1-3	Chassis Ground	TB1-3

12 Vdc and 12 Vdc (optional)		24 Vac and 12 Vac (optional)	
Positive (+)	TB1-1	High	TB1-1
Negative (–)	TB1-2	Low	TB1-2
Chassis Ground	TB1-3	Chassis Ground	TB1-3

Wiring Connections:
Range Selection, Gain Adjustment
Figure 6.



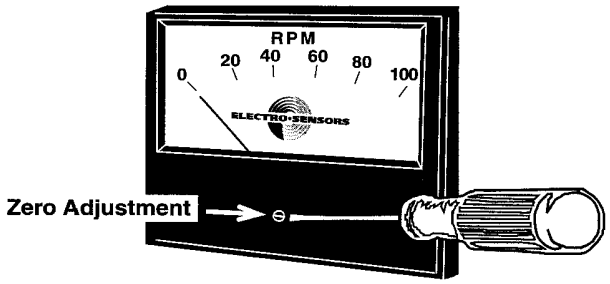
S1-1	S1-2	RANGE
OFF	ON	0-50
OFF	OFF	0-500
ON	OFF	0-5000

Calibration:

Refer to figure 6 for the location of all calibration adjustments. All units are scaled and calibrated at the factory. **You must provide scale and calibration information when ordering.** Examples of this information would be: RPM range, shaft size for FPM, gallons per revolution for GPM, etc. If it should be necessary to field calibrate the meter, the following procedure should be followed:

1. Refer to figure 7. With the AC power OFF, adjust the screw adjustment on the front of the meter for a reading of zero on the meter. This is a mechanical zero.
2. Select the proper operating range on switch S1, using the table for proper positioning of S1-1 and S1-2, for the desired range.
3. With AC power applied and the shaft running at a known speed, adjust the GAIN ADJUSTMENT (R8) clockwise to increase, and counterclockwise to decrease for a meter reading of the known speed.

Figure 7



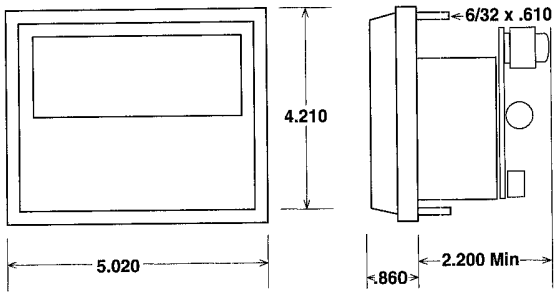
Troubleshooting Guide:

Problem:	Possible Solutions:
1. No Rate or RPM Indication	Is Power Present on TB1-1 and TB1-2?
	Check Sensor Gap and Alignment
	Check Proper Wiring for Sensor Type

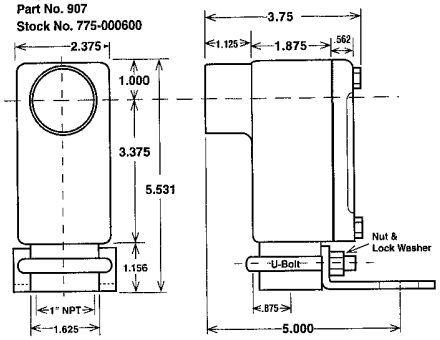
Electro-Sensors, Inc. Analog Tachometer • H100T

Dimensional Drawings:
Dimensions in Inches

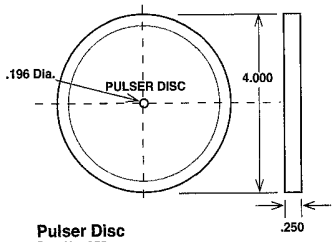
Panel Meter



Explosionproof Sensor
Part No. 907
Stock No. 775-000600

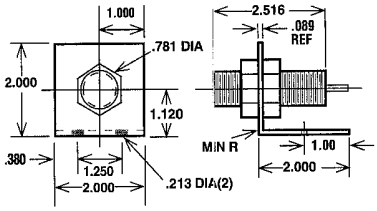


*Sensing Head Dimensions are ±.062

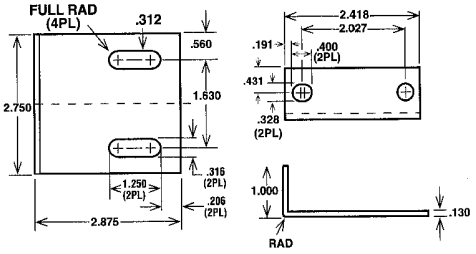


Pulser Disc
Part No. 255
Stock No. 700-000200

Digital Sensing Head
Part No. 906
Stock No. 775-000500



Mounting Bracket



General Specifications:

Input Power:

Voltage	115 Vac ±10% Standard 230 Vac, 24 Vac, 24 Vdc, 12 Vdc Optional
Frequency	50–60 Hz
Wattage	2.4 VA

Input Signal:

Type	Open Collector/Logic
Amplitude	15 V Nominal, 7 V min, 60 V max.
Pull-Up	2200 Ohms to 15 V
Pulse Width	100 µsec Minimum
Frequency	800 Hz Maximum

Display:

Type	Analog Needle Pointer
Scale Size	4-Inch
Movement	Taut Band
Resolution	50 Graduations
Accuracy	±2% of Full Scale
Repeatability	±0.1%
Calibration Adjustment	15-Turn Potentiometer
Ranges	0–50 rpm, 0–500 rpm and 0–5000 rpm Switch Selectable
Low Speed Filtering	Switch Selectable
Scaling	To Customer Specifications

Physical/Environmental:

Enclosure Material	Molded Phenolic with Glass Window
Enclosure Dimensions	4.210 Inch H. x 5.020 Inch W. x 3.062 D.
Operating Temperature	0° to +65° C
Storage Temperature	-20° to +65°C

Pulser Disc:

Material	Nylon Standard, Aluminum Optional
Dimensions	4-Inch Diameter x 1/4-Inch Thick
Operating Temperature	-40°C to +60°C
Maximum Speed Range	Consult Factory

Pulser Wrap:

Material	PVC Standard
Dimensions	O.D. = shaft I.D. +3.00-Inch x 1.500-Inch Width
Operating Temperature	-40°C to +60°C
Maximum Speed	Consult Factory

Standard Sensor:

Material–Sensor Body	Aluminum
Sensor Mounting Bracket	Steel
Thread Size–Standard Sensor	3/4-16UNF
Output Type	Open Collector, Current Sinking 20mA max.
Signal Cable	3-Conductor Shielded, 10 Feet Supplied
Operating Temperature	-40°C to +60°C*
Sensing Distance between Sensor and Disc	1/16-inch to 1/4-inch

Optional Explosionproof Sensor:

Signal Cable	3-Conductor Shielded, 10-Feet Supplied
Housing and Cover	Cast Aluminum, C.S.A. Approved U.L.® Rated: Class I Group D. Class II Group E, F, G. Class III.

Higher Temperature Ranges Available Consult Factory

Specifications Subject to Change Without Notice

H100T Spare Parts List:

Description	Part No.	Stock No.
Meter Assembly, Complete	800-004200	–
Meter Movement only, w/ Scale	510-000100	264
Standard Digital Sensor	775-000500	906
Explosionproof Digital Sensor	775-000600	907
Standard Sensor Cable, 3-Conductor	610-000200	213-A
Male Conduit Adapter for Std. Sensor	271-000100	259-M
4-Inch Diameter Nylon Pulser Disc	700-000200	255
Pulser Wraps	Consult Factory	

CALL TOLL FREE FOR MORE INFORMATION

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